

REMARKS

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1-4 and 11-14 remain under consideration. Claims 5-10 and 15-20 are withdrawn from consideration. The Examiner is respectfully requested to reconsider his rejections in view of the amendments and remarks as set forth below.

Rejection under 35 USC 112

Claims 1-4 and 11-14 stand rejected under 35 USC 112, second paragraph, as being indefinite. This rejection is respectfully traversed.

The Examiner points out a number of instances of insufficient antecedent basis and other minor problems in the claims. By way of the present amendment, Applicants have modified the claims in order to overcome these problems. Thus, the phrase "to pick up" has been removed from claim 1.

The paragraph describing the "means for driving the lifting plate" has been removed from claim 1. In regard to the use of "the" before paper in line 11, Applicants submit that antecedent basis is present in the preamble. The other problems with antecedent basis have been overcome.

Rejection under 35 USC 102

Claims 1-4 and 11-14 stand rejected under 35 USC 102 as being anticipated by Nakamura, U.S. Patent 5,419,543. This rejection is respectfully traversed.

The Examiner states that the reference shows a paper feeding mechanism for supplying paper to a pick-up roller 21, including a swing gear assembly 62, 63 and 64, which has a
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plurality of gears and one linkage bar with one end fixed and the other swingable, a lifting plate 11 for holding paper and a cam engaged with the swingable end of the swing gear assembly to rotate, and means for driving the lifting plate.

Applicants submit that the claims as presently amended are not anticipated by the Nakamura reference. Nakamura discloses a feeding apparatus which has a swing gear assembly, a lifting plate, a cam and a spring. The purpose of the Nakamura device is to use only a single motor as the drive power source. Thus, the prior art attempts to make the apparatus smaller and reduce the cost of parts. The cam of Nakamura is used to move the lifting plate upwards or downwards. However, the spring which urges the paper tray 11 is used to provide the constant force to the feed roller. Thus, this device cannot provide automatic compensating feeding force for the pick-up of paper so that, when the apparatus is old, multi-feed or mis-feeds often occur.

Instead, in the present invention, a paper feeding mechanism is provided that includes a swing gear assembly, a lifting plate and a cam without a spring element. The cam has a non-equal radius profile and is located below the lifting plate and engages with the swingable end of the spring gear assembly. The cam can rotate to drive the movable end of the lifting plate upwards or downwards to change a relative distance between the holding paper and the pick-up roller and to provide for automatic compensating contact force. This feature is not seen in the reference, where the actual holding force is provided by a spring which can become stretched over time and thus cannot always provide sufficient contact force. The present invention can automatically control the pick-up force and overcome the problem of multi-feed and mis-feeds which result from stretching of the spring or from different paper properties.

In particular, claim 1 has now been amended to make it clear that the cam is located below the lifting plate, and that the cam has a non-equal radius profile. The relative distance and the automatic compensating contact force between the paper and the pick-up roller is provided by the cam. These features are not shown in the Nakamura reference. Accordingly, claim 1 is considered to be allowable.

Claim 11 recites a similar arrangement of a paper feeding mechanism with automatic compensating feeding force and a non-equal radius profile. Applicants submit that this claim is likewise allowable for the same reasons recited above in regard to claim 1. Claims 2-4 depend from claim 1, and claims 12-14 depend from claim 11. These dependent claims are allowable based on their dependency from allowable independent claims.

Conclusion

In view of the above remarks, it is believed that the claims clearly distinguish over the patents relied on by the Examiner, either alone or in combination. In view of this, reconsideration of the rejection and allowance of all the claims are respectfully requested.

In the event that any outstanding matters remain in this application, the Examiner is invited to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants respectfully petition for a one (1) month extension of time for filing a response in connection with the present application and the required fee of \$120.00 is attached herewith.

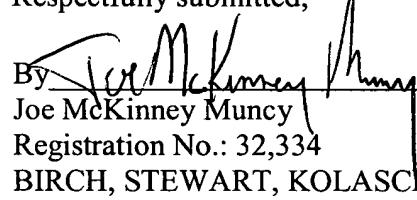
Application No. 10/700,458
Amendment dated December 20, 2005
Reply to Office Action of August 25, 2005

Docket No.: 3313-1050P

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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